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## Measuring Food Security in the United States

# Household Food Security in the United States in 1995

## Executive Summary

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# Household Food Security in the United States in 1995

## Executive Summary



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### Prepared for:

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## EXECUTIVE SUMMARY

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In April 1995, the U.S. Bureau of the Census conducted the first Food Security Supplement to its regular Current Population Survey (CPS). With about 45,000 household interviews, the Food Security Supplement provides the basis for the first comprehensive measurement of food insecurity and hunger in a nationally-representative sample of U.S. households. This survey is the cornerstone of the food security measurement project begun in 1992 to carry out a key task assigned by the Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program (NNMRRP). The task is to develop a standard measure of food insecurity and hunger for the United States, for use at national, state, and local levels.

This project has been a cooperative undertaking by the responsible federal government agencies under the leadership of the Food and Consumer Service (FCS) of the U.S. Department of Agriculture jointly with the National Center for Health Statistics/Centers for Disease Control and Prevention (NCHS) of the Department of Health and Human Services. Academic and other private-sector research experts in the field of food security and hunger measurement have aided the project from its beginning, achieving a substantial public/private partnership in the effort to develop a state-of-the-art food security survey questionnaire, statistical measurement method, and food insecurity and hunger measures and prevalence estimates for the nation.

The present study reports the first of these national prevalence estimates for food insecurity and hunger for the 12-month period ending in April 1995, based on the CPS data and applying a sophisticated statistical measurement method that creates a detailed scale for measuring the underlying level of severity of food insecurity and hunger experienced in U.S. households. Based on this food security scale, a simpler measure is constructed that classifies households into several broad ranges or levels of severity, defining four categories of food security status for U.S. households:

- food secure,
- food insecure without hunger,
- food insecure with moderate hunger, and
- food insecure with severe hunger.



The categorical measure allows one to estimate the number of American households that experience food insecurity and hunger within each of the broad levels specified. The measure is designed to be useful primarily for monitoring changes in prevalence over time, and comparing prevalence across groups within the population, on a sustained, consistent basis.

## **Background and Definitions**

Food security has been defined briefly as "assured access to enough food for an active, healthy life." The household should have access to enough food, the food should be nutritionally adequate, it should be safe, and the household should be able to obtain it through normal channels. Although all of these dimensions of food security are important, the measure presented here focuses on whether the household has "enough" food, as perceived and reported by adult members of the household. When food insecurity on this central dimension reaches severe levels, actual hunger for household members is the result.

Hunger is defined briefly as "the uneasy or painful sensation caused by a lack of food." The CPS Food Security Supplement aims to measure only that hunger which results from the financial resource constraint of the household—from being unable to afford enough food. The survey does not measure hunger that results from being too busy to eat, from voluntary fasting, from illness, or from any other cause except lack of financial resources. Thus, food insecurity and hunger measured here are clearly related to general income poverty. They focus, however, on only one area of household circumstances, rather than on the general problem of whether resources are adequate to cover all areas of need.

Interest in measuring food insecurity and hunger springs from two sources. First, food security is an important dimension of basic individual and family well-being, analogous to health or housing. Food insecurity and hunger are undesirable in their own right, and possible precursors to more serious health and developmental problems. Monitoring food security is important for understanding one fundamental component of the well-being of the American population and for identifying geographic or other subgroups with particularly undesirable and high-risk conditions.

Second, numerous public and private food assistance programs attempt to ameliorate food insecurity and hunger. Accurate measurement of food insecurity and hunger are important for program planners and policymakers to assess adequately the effectiveness of these programs



in meeting their intended objectives. This need for concrete indicators of program outcomes takes on new importance for federal agencies under the mandate of the 1993 Government Performance and Results Act (GPRA), which requires agencies to give increased, explicit attention to such indicators.

The government's food security measurement effort was built upon extensive private-sector research in the late 1980s that expanded and sharpened the understanding of food security, food insecurity, and hunger. This work led to the development by an expert working group of the American Institute of Nutrition of the following conceptual definitions, which were published by the Life Sciences Research Office (LSRO) of the Federation of American Societies for Experimental Biology (Anderson/AIN/LSRO, 1990):

- **Food security** — “Access by all people at all times to enough food for an active, healthy life. Food security includes at a minimum: (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (e.g., without resorting to emergency food supplies, scavenging, stealing, or other coping strategies).”
- **Food insecurity** — “Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways.”
- **Hunger** — “The uneasy or painful sensation caused by a lack of food. The recurrent and involuntary lack of access to food. Hunger may produce malnutrition over time. . . . Hunger . . . is a potential, although not necessary, consequence of food insecurity.”

These definitions underlie the CPS Food Security Supplement and the new measurement scale discussed below, with the one additional qualification, already described, that only resource-constrained or poverty-linked food insecurity and hunger are intended to be captured by the measure.

### **The Food Security Scale**

The Food Security Supplement contains a large battery of questions asking respondents about various aspects of food sufficiency in their households. Taken individually, none of these questions can provide a measure of the severity and extent of food insecurity or hunger. Taken together, a systematic set of 18 of the CPS questions (those with strong statistical properties

identified by the measurement method) do provide such a measure. The CPS questions ask about five general types of household food conditions, events, or behaviors:

- Anxiety that the household food budget or food supply may be insufficient to meet basic needs;
- Perceptions that the food eaten by household members was inadequate in quality or quantity;
- Reported instances of reduced food intake, or consequences of reduced food intake (such as the physical sensation of hunger or reported weight loss) for adults in the household;
- Reported instances of reduced food intake or its consequences for children in the household; and
- Coping actions taken by the household to augment their food budget or food supply (such as borrowing from friends or family or getting food from emergency food pantries).

All of the CPS food security questions explicitly condition the event or behavior identified as being due to financial limitation (such as "... because we couldn't afford enough food" or "because there wasn't enough money to buy food.") Each question addresses an explicit time frame, either the past 12 months or the past 30 days. Several key items include follow-up questions on how often the event or condition occurred within the past 12 months or the past 30 days.

Two separate measurement scales were developed, one for the severity of food insecurity within the 12-month period, the other for the 30-day period. The 12-month scale covers a broader range of severity levels of food insecurity and hunger, because fewer questions were asked in the 30-day time frame. The more comprehensive 12-month measure is expected to be the more useful, both for research and policy purposes, and is the focus of discussion in this report.

The scaling methodology began with exploratory linear and non-linear factor analyses to determine the number of distinct factors that should be represented. Scales were estimated using a Rasch measurement model, a form of non-linear factor analysis in the family of Item

Response Theory models.<sup>1</sup> Most food insecurity and hunger questions met the statistical criteria for inclusion in the models, although the resource augmentation questions did not. The final 12-month food security scale is based on answers to 18 questions, including some from each of the first four types of questions identified above.

Key findings during the scaling analysis were as follows:

- The results are consistent with previous research characterizing food insecurity as a “managed process” through several stages or levels of severity (Radimer *et al.*, 1992). In this process, households first note serious inadequacy in their food supply, feel anxiety about the sufficiency of their food to meet basic needs, and make adjustments to their food budget and food served. As the situation becomes more severe, adults experience reduced food intake and hunger, but they spare the children this experience. In the third stage, children also suffer reduced food intake and hunger and adults’ reductions in food intake are more dramatic.

The severity ranking of questions in the measurement scale proceeds generally in this order. At the same time, it shows that all three stages fit well in a single scale, which means that the level of severity of food insecurity can be measured as an essentially unidimensional aspect of the food insecurity/hunger phenomenon.

- The measurement models were tested with three different population groups: households with children; those without children but with one or more elderly members (age 60 or older); and those with neither children nor elderly members. Tests showed that a single scale can be used with all three populations.
- An extensive series of tests found the food security scale to have good reliability, including good internal (or content) validity and good external (or construct) validity.

### Defining Levels of Severity of Food Insecurity and Hunger

Four categories of food security status are defined, based on the distinct behavioral stages associated with the managed process of food insecurity and hunger:

- **Food secure** — Households show no or minimal evidence of food insecurity.

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<sup>1</sup> IRT models are a form of statistical measurement model developed in educational testing, where test items vary systematically in difficulty and the overall score measures the level of difficulty that the tested individual has mastered. In the present application, the severity of food insecurity that the household has experienced is analogous to the level of test difficulty that an individual has mastered.



- ***Food insecure without hunger*** — Food insecurity is evident in households' concerns and in adjustments to household food management, including reduced quality of diets. Little or no reduction in household members' food intake is reported.
- ***Food insecure with moderate hunger*** — Food intake for adults in the household has been reduced to an extent that it implies that adults have repeatedly experienced the physical sensation of hunger. Such reductions are not observed at this stage for children in the household.
- ***Food insecure with severe hunger*** — Households with children have reduced the children's food intake to an extent that it implies that the children have experienced the physical sensation of hunger. Adults in households with and without children have repeatedly experienced more extensive reductions in food intake at this stage.

Each household is classified into one of the four food security status categories on the basis of its value on the food security scale; Exhibit ES-1 illustrates the process. Households with zero scale score are those reporting no indications at all of food insufficiency or insecurity. Households with low scale values are those reporting very slight experiences of food insecurity. Both these groups are classified as food secure. At the other extreme, households with high scale values are those who report experiencing all or nearly all of the conditions covered by the scale, and are classified as food insecure with severe hunger. A household classified into a particular category must normally have experienced all of the conditions associated with the less-severe categories, plus at least two or three of the conditions associated with the assigned category.

### **The Prevalence of Food Insecurity and Hunger in the United States**

The large majority of American households were food secure in the year ending April 1995. About 88.1 percent of the approximately 100 million households in the United States are classified as food secure over that period, as illustrated in Exhibit ES-2. About 11.9 million households, however, experienced food insecurity at some level during that year.

Most of the food insecure households are classified as food insecure without hunger (7.8 percent, or 7.8 million households). About 4.1 percent, however, are classified as food insecure with hunger. Thus, one or more adult members of some 4.2 million American households are estimated to have experienced reduced food intake and hunger as a result of financial constraints in the year ending in April 1995.

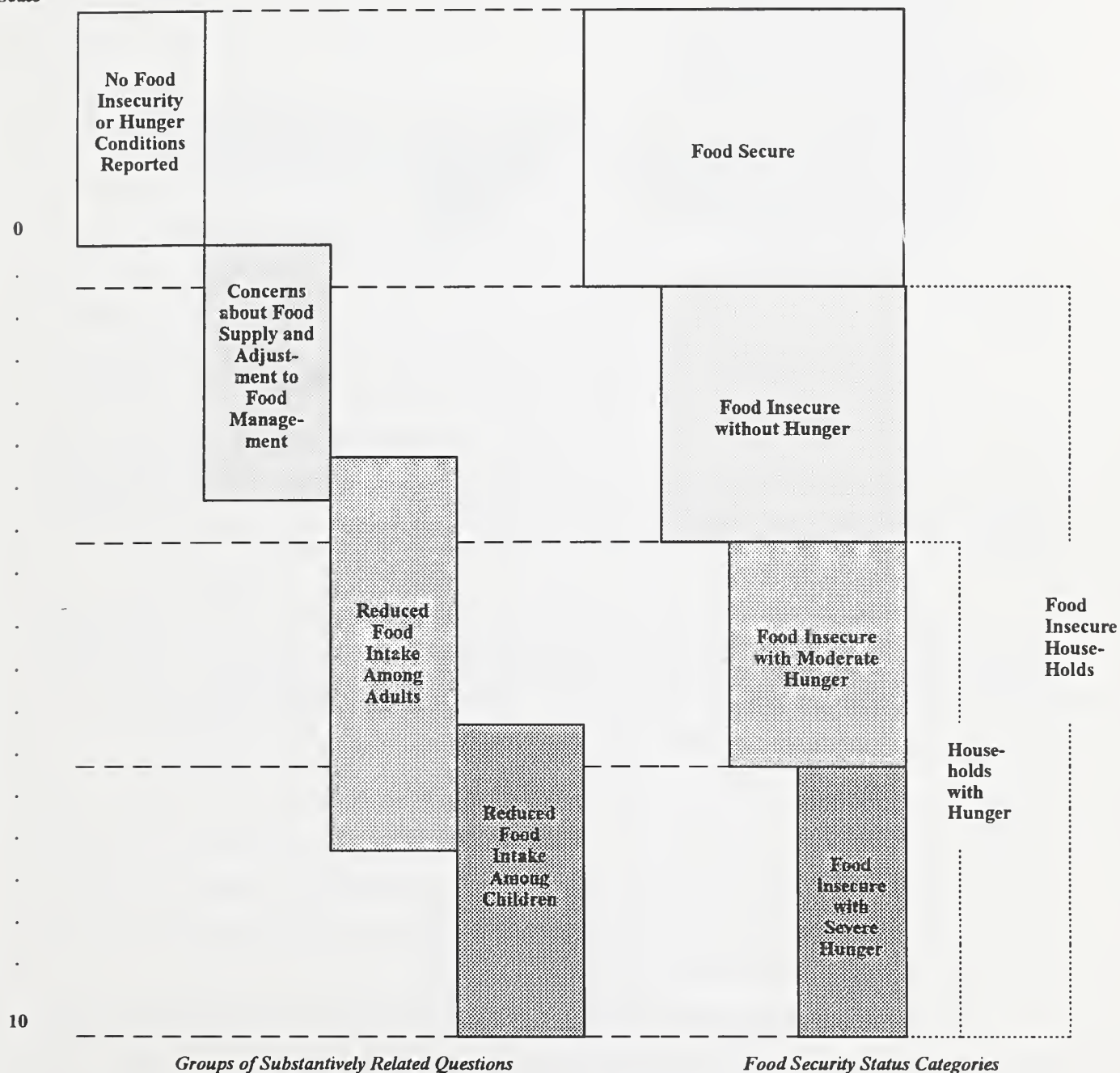
## Exhibit ES-1

## THE FOOD SECURITY STATUS CATEGORIES

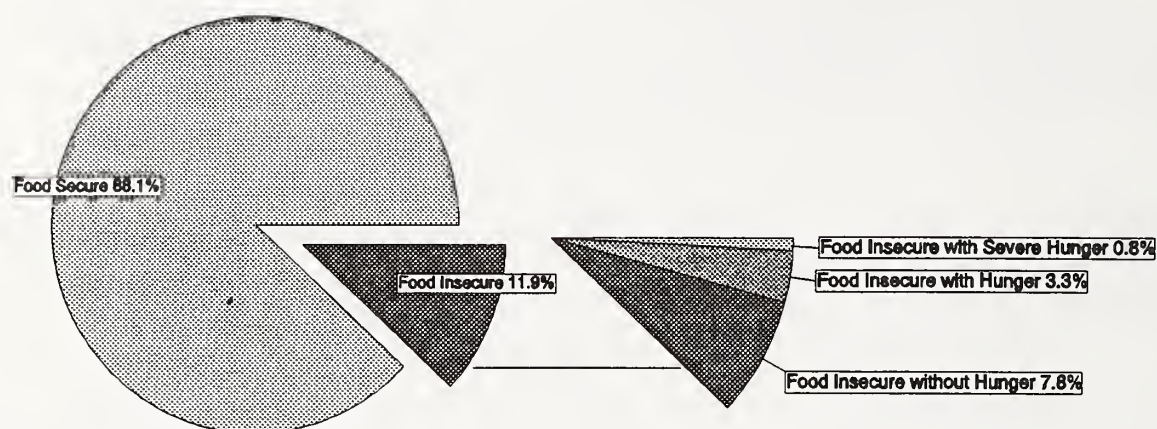
House-  
hold's  
Value on  
Food  
Security  
Scale

*The Severity Ranking of Questions Reflects  
the Managed Process of Food Insecurity*

*Food Security Status Depends on  
the Complete Set of Conditions  
Experienced by the Household*



**Exhibit ES-2**  
**PREVALENCE OF FOOD SECURITY AND HUNGER, 1995**



Among the households experiencing some level of hunger, about 800,000 (0.8 percent) are classified as food insecure with severe hunger. In these households, children as well as adults experienced reduced food intakes and hunger. Adults in these households had very substantial reductions in food intake, such as not eating for a whole day because of lack of money.

Food insecurity is clearly related to income and poverty, but the relationship is not exact. Not all poor households are food insecure, and only a small percentage of households with below-poverty incomes experience actual hunger (13.1 percent). The percent of households estimated to experience food insecurity is somewhat less than the poverty rate for individuals in the same period (12 percent vs. 15 percent). More than a third of poor households are classified as food insecure, whereas only 8 percent of households with above-poverty incomes are food insecure, and most of those have near-poverty incomes. Public and private food assistance programs may account for the fact that so many poor households are food secure, but this hypothesis has not yet been analyzed.

Even though food insecurity does not exactly follow income lines, food insecurity tends to be concentrated in population groups that have comparatively high poverty rates. For example, food insecurity rates are higher than average in female-headed households, in



households with children (especially young children), in Black and Hispanic households, and in central city areas.

### **Next Steps**

The present analysis represents an important step in the measurement of food security, food insecurity, and hunger, but much more lies ahead for the food security measurement project. A task for the immediate future is to identify subsets of the questions in the CPS Food Security Supplement, and appropriate scaling procedures, so that smaller survey efforts can approximate the scale presented here with reasonable reliability. Another ongoing effort is to refine and strengthen the Food Security Supplement itself, so that the annual surveys planned for the future will yield comparable and increasingly reliable information. In the longer term, FCS and the larger research community will be undertaking several lines of data collection and analysis to understand better the phenomenon of food insecurity and to apply that understanding in the design and implementation of nutrition policies and food assistance programs.

### **Food Security Measurement Project Reports**

Hamilton, W.L., J.T. Cook, W.W. Thompson, L.F. Buron, E.A. Frongillo, C.M. Olson, and C.A. Wehler. "Household Food Security in the United States in 1995: Summary Report of the Food Security Measurement Project." Cambridge, MA: Abt Associates Inc., 1995.

Hamilton, W.L., J.T. Cook, W.W. Thompson, L.F. Buron, E.A. Frongillo, C.M. Olson, and C.A. Wehler. "Household Food Security in the United States in 1995: Technical Report of the Food Security Measurement Project." Cambridge, MA: Abt Associates Inc., 1995.







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